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ABSTRACT

This document presents an outline for a 135-hour course designed to familiarize the beginning student with the basic concepts common to aircraft materials and processes, together with the requirements of proper cleaning and corrosion control as outlined by the Federal Aviation Agency. The aviation airframe and powerplant maintenance technician is expected to demonstrate his ability to explain the proper methods of cleaning the various components of an aircraft or engine, to prove his knowledge of nondesctactive testing methods, to inspect and check welds, to understand the basic heat-treatment processes and reasons for their use, to make precision measurements using various measuring instruments, and to indicate his knowledge of aircraft hardware and materials. The behavioral objectives and performance standards necessary for a person to become an airframe mechanic or powerplant mechanic, or to obtain a Federal Aviation Agency license are specified. An eight-item bibliography, a list of five films, and a Quinmester posttest sample are included. (KP)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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Course Outline

AVIATION MECHANICS 1 (Power and Frame)
(Aircraft Materials, Processes, Cleaning and Corrosion Control)

Department 48 - Course 9073.01

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M I A M I, F L O R I D A 33132

Course Outline

AVIATION MECHANICS 1 (Power and Frame)
(Aireraft Materials, Precesses, Cleaning and Corrosion Control)

Department 48 - Course 9073.01

the division of

VOCATIONAL, TECHNICAL AND ADULT EDUCATION

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Dade County Public Schools
Miami, Florida 33132

Published by the Dade County School Board

Course Description

9073	48	9073.01	Aircraft Materials Processes, Cleaning and Corrosion Control
State Category Number	County Dept. Number	County Course Number	Course Title

The main objective of this course is to familiarize the beginning students with the basic concepts common to aircraft materials and processes. Included are the requirements of proper cleaning and corrosion control as outlined by the Federal Aviation Agency.

Indicators of success: The following regular requirements of entry and/or special recommendations of a student counselor; having first met the minimum probationary requirements.

Name of Test	Minimum Requirements	Probationary Requirements
1. Mental Ability		
a. Otis Quick-Scoring Mental Ability (Beta)	100 I.Q. or 50% ile	90 I.Q. or 21% ile
b. School or College Ability Test (form 3A, 3B)	50% ile (Total Score)	30% ile (Total Score)
2. Reading Skills		
California Intermediate Reading Test	50% ile (Total Score)	30% ile (Total Score)
3. Arithmetic Skills		
California Intermediate Arithmetic Test	50% ile (Total Score)	30% ile (Total Score)

PREFACE

The course outline that follows has been prepared as a guide to help the trainee in the skills and knowledge necessary to become an Aviation Airframe or Powerplant Mechanic.

This is a course composed of knowledge and skills necessary should one decide to follow the Airframe Mechanic or Powerplant Mechanic Curriculum or both leading to a Federal Aviation Agency License.

Trainees desiring to follow this curriculum should contemplate continuing with the remaining sections of this basic part of the Airframe, Powerplant or combined Airframe and Powerplant curriculum. This is a course composed of two blocks of several units each requiring one quinmester or 135 hours of instruction.

Great emphasis will be placed on the use of lecture, audio-visual aids and instruction sheets of various types. A listing of the Behavioral Objectives which are to be met to earn satisfactory grades is included. Following each unit title will be found, in parentheses, several letters and numbers designating the time spent in terms of theory and shop work. EIT indicates the estimated instructional time, T indicates the time spent in theory or classroom work and L/S indicates the time spent in the laboratory or shop.

The Level 1 following a unit denotes that the student must have knowledge of general principles but no practical application, nor development of manipulative skills. Instruction is given by lecture, demonstration and discussion. The Level 2 following a unit denotes that the student must have knowledge of general principles and limited practical application, and adequate manipulative skill to perform basic operations. Instruction is given by lecture, demonstration, discussion and a limited amount of practical application. The Level 3 following a unit denotes that the student must have knowledge of general principles and performance of a high degree of practical application and sufficient manipulative skill to accomplish return-to-service operations. Instruction at this level is given by lecture, demonstration, discussion and a large amount of practical application.

This outline has been developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and the Vocational Teacher Education Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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GOALS

The aviation airframe and powerplant maintenance technician must be able to demonstrate:

1. His ability to demonstrate the proper methods of cleaning the various components of an aircraft or engine.

2. His knowledge of non-destructive testing methods.

3. His ability to inspect and check welds.

4. His knowledge of the basic heat-treatment processes and the reason for their use.

5. His ability to make precision measurements using various measuring instruments.

6. His knowledge of aircraft hardware and materials.

Course Outline

AVIATION MECHANICS 1 (Power and Frame)
(Aircraft Materials, Processes, Cleaning and Corrosion Control)

Department 48 - Course 9073.01

I. AIRCRAFT CLEANING AND CORROSION CONTROL (50 hours)

A. Identification and Selection of Cleaning Materials
(Level - 3) (EIT-15 hrs) (T-5 hrs) (L/S-10 hrs)
1. Identification of Caustic Cleaners
   a. Safety Precautions
   b. Solution and soak time
2. Identification of Cleaning Agents for Engine Parts
   a. Electrolytic
   b. Vapor degreasing
   c. Mechanical cleaning
   d. Pickling

B. Perform Aircraft Cleaning and Corrosion Control
(Level - 3) (EIT-35 hrs) (T-10 hrs) (L/S-25 hrs)
1. Cleaning Exterior of Aircraft
   a. Soap solutions
   b. Caustic cleaners
2. Corrosion Identification
   a. Local cell corrosion
   b. Concentration (crevice) cell
   c. Galvanic corrosion.
   d. Chemical corrosion.
   e. Intergrannular corrosion
   f. Stress corrosion
   g. Exfoliation corrosion
3. Remove Corrosion
   a. Light corrosion
   b. Surface corrosion
   c. Heavy corrosion
4. Protective Coating Application
   a. Aluminum and aluminum alloys
   b. Steel
   c. Magnesium alloys
   d. Copper alloys
   e. Wood
   f. Miscellaneous
5. Rust Removal
6. Cleaning Rubber Products

II. MATERIALS AND PROCESSES (90 hours)

A. Non-Destructive Testing
(Level - 2) (EIT-20.5 hrs) (T-11 hrs) (L/S-9.5 hrs)
1. Select Non-destructive Testing Methods
   a. Non-destructive inspection
   b. Detecting defects in aluminum castings and forgings
   c. Magnetic particle inspection
   d. Magnaflux and Magnaglo
   e. X-ray or radiographic inspection
   f. Ultrasonic inspection
2. Perform Dye Penetrant Inspection
   a. Dye penetrant inspection
   b. Flourescent type dye penetrant
   c. Chemical etching
3. Perform Magnetic Particle Inspection
   a. Magnetic particle inspection
   b. Material that can be inspected
   c. Demagnetization
4. Perform Test to Distinguish Between Heat Treatable and Weldable Aluminum Alloys

B. Inspect and Check Welds
(Level - 3) (EIT-5.5 hrs) (T-1 hr) (L/S-4 hrs)
1. Inspect and Evaluate Welds
   a. Desirable characteristics of a completed weld
   b. Undesirable characteristics of a completed weld
   c. Unacceptable defects
   d. Rewelding a previously welded joint
2. Perform Inspections of Welded Assemblies
   a. Importance of finding flaws in welds
   b. Aircraft structures involved
   c. Types of inspection
      (1) Dye penetrant and zyglo
      (2) Magnetic particle inspection
      (3) X-ray
      (4) Optical aids

C. Perform Basic Heat Treatment Processes
(Level - 2) (EIT-7 hrs) (T-5.5 hrs) (L/S-1.5 hrs)
1. Effect of Heat Treatment
   a. Relationship between hardness and tensile strength
   b. Testing for hardness
   c. Methods of hardening aluminum alloys
   d. Results of incorrect procedures

II. MATERIALS AND PROCESSES (Contd.)

2. Identify Aluminum Alloy Code Designation of Heat-Treatability
   a. Aluminum alloy codes
   b. Aircraft applications
3. Heat Treatment Processes and Strain Relieving
   a. Types of aluminum alloy
   b. Types of heat treating process
   c. Stress relieving of welded steel parts (Normalizing or Stress Annealing)

D. Perform Precision Measurements
(Level - 3) (EIT-13 hrs) (T-2 hrs) (L/S-11 hrs)
1. Inspection Concepts
   a. Manufacturing - Production
   b. Line maintenance
2. Inspection
   a. Dimensional checks
   b. Fits and clearances
   c. Status report forms and/or tags

E. Identify and Select Aircraft Hardware and Materials
(Level - 3) (EIT-39 hrs) (T-22.5 hrs) (L/S-16.5 hrs)
1. Aircraft Fasteners
   a. Bolts
      (1) Nomenclature
      (2) Measurement
      (3) Coding
      (4) Techniques of fastening with bolts
      (5) Types of bolts
         (a) Clevis
         (b) Internal wrenching
         (c) Hex head
         (d) Special
   b. Nuts
      (1) Measurement
      (2) Coding
      (3) AN numbers and thread pitch
      (4) Types
         (a) Self locking
         (b) Castelated
         (c) Special
         (d) Shear and crown

II. MATERIALS AND PROCESSES (Contd.)

c. Pins
   (1) Cotter
      (a) Measurement
      (b) Coding
      (c) Techniques of installing
   (2) Taper
      (a) Purpose or funetion
      (b) Techniques of installing
   (3) Flat head
      (a) Purpose or funetion
      (b) Where used
   (4) Safety
      (a) Purpose or function
      (b) Types
      (c) Where used

d. Screws
   (1) Types
   (2) Measurements
   (3) Coding
   (4) Purpose or function
   (5) Techniques of installing

e. Washers
   (1) Types
      (a) Locking
      (b) Plain
      (c) Spacer
   (2) Purpose and use
   (3) Measurement
   (4) Coding
   (5) Special

2. Identify Aircraft Control Cable
   a. Types of construction
   b. Materials and forming
3. Identify Materials Suitable for Use in Construction of Firewalls and Exhaust Shrouds
   a. Materials used in firewalls
   b. Shrouds and manifolds
4. Rivet Identification
   a. AN coding system
   b. MS numbering system
   c. MAS and trade marked rivets
      (1) Cherry
      (2) Huck
      (3) Hi-shear
      (4) DuPont explosive

II. MATERIALS AND PROCESSES (Contd.)

d. Limitations of uses
e. Strength control methods

5. Determine Suitability of Materials for Aircraft Repairs
   a. Sources of information
   b. Stress analysis
   c. Structural strength considerations
6. Identification of Aluminum Alloys
   a. Old and new code numbering systems
   b. Alloy identification
   c. Hardness identification
   d. Alclad/Pureclad identification
7. Identification of Steel Alloys
   a. SAE code identification
   b. Use of steel in aircraft
   c. Identification of temper
8. Recognition of Economic and Engineering Criteria in the Selection of Materials
   a. Selection of materials as dictated by design of the airplane
   b. Shaping of materials
   c. Joining of materials
   d. Aircraft materials

III. QUARTERMASTER POST TEST

BEHAVIORAL OBJECTIVES

BLOCK I - AIRCRAFT CLEANING AND CORROSION CONTROL

A. Identification and Selection of Cleaning Materials

1. Identification of Caustic Cleaners
Given:
Samples of caustic cleaners and aluminum alloys.
Performance:
The student will apply caustic cleaning materials to the aluminum alloy samples and observe the effects of varying soak times. He will recognize and point out damage due to excessive strengths and soak times should they appear in the samples being cleaned.
Standard:
From a display of aluminum alloy samples, the student will recognize those samples that have been damaged by excessive cleaning.

2. Identification of Cleaning Agents for Engine Parts
Given:
Manufacturer's information sheets, manuals, product catalogues and typical aircraft engine parts.
Performance:
The student will use the reference information to guide his selection of the correct cleaning material for steel, aluminum, titanium and magnesium parts. He will demonstrate his ability to identify and use approved cleaners and brighteners.
Standard:
The student will interpret information from the reference manuals and catalogues without error. He will correctly identify packaged cleaning and brightening agents and follow printed instruction for the use of such products.

B. Perform Aircraft Cleaning and Corrosion Control

1. Cleaning Exterior of an Aircraft
Given:
Appropriate cleaners and equipment.

Performance:

The student will select and employ the correct materials and clean the exterior surfaces of an airplane.

Standard:

The task will be accomplished without damage to the finish or components and systems of the airplane.

2. Corrosion Identification

Given:

Sample corroded aluminum parts.

Performance:

The student will select those parts which indicate intergrannular corrosion. He will describe two methods of preventing and/or controlling this type of corrosion.

Standard:

The student will identify at least 80 percent of the samples showing corrosion.

3. Remove Corrosion

Given:

Corroded aluminum parts, appropriate cleaning agents, equipment and facilities, and reference information.

Performance:

The student will remove corrosion products, such as metal flakes, scale, powder and salt deposits from aluminum parts. He will describe how parts are protected from dissimilar metal corrosion.

Standard:

Removal of corrosion products shall not involve unnecessary removal of solid metal. Description of corrosion protection methods shall be in accordance with specific reference information.

4. Protective Coating Application

Given:

Typical aircraft component parts, protective paints and organic coatings.

Performance:

The student will apply paints and/or similar organic coating to aircraft parts. He will clean and protect battery compartments and

adjacent areas by neutralizing the acid, removing corrosion, and applying acid-proof paint. He will identify "fretting corrosion".

Standard:

Resultant finishes will be of return-to-service standard. When shown sample parts, the student will be able to distinguish between chemically induced and "fretting" corrosion.

5. Rust Removal

Given:

Steel aircraft parts, rust inhibiti[illegible]terials and suitable equipment for removing r[illegible].

Performance:

The student will remove rust from ferrous aircraft parts and apply rust inhibiting finishes. He will describe the methods of protecting the interior of steel tubing and demonstrate the use of blast cleaning methods.

Standard:

The finished parts will be of return-to-service quality.

6. Cleaning Rubber Products

Given:

Sample aircraft rubber products (tires, tubes, boots, etc.)

Performance:

From sample rubber products that show the deteriorating effect of various cleaning materials, acids, caustics, hydrocarbons, sunlight, heat, etc., the student will describe the probable cause. He will demonstrate acceptable methods of removing oil, hydraulic fluid, battery acid, solvents and caustics from tires.

Standard:

Provided with ten samples displaying evidence of deterioration, the student will identify the probable cause in 70 percent of the sample cases. Cleaning of tires will be accomplished without further damage to the tire.

BLOCK II - MATERIALS AND PROCESSES

A. Non-Destructive Testing

1. Select Non-Destructive Testing Method

Given:

Written descriptions of six typical aircraft defects or flaws including engine crankshaft flaws, surface cracks in aluminum castings and forgings, cracks in materials where only one side of the material is accessible, component defects requiring radiography or X-ray inspection for proper detection and written information concerning non-destructive testing.

Performance:

The student will select which method of testing is best suited for detection and evaluation of each described defect or flaw and briefly state how the inspection should be accomplished.

Standard:

Select proper method for at least four of the described defects or flaws and at least four statements of how inspection is to be done to be in accordance with written information provided.

2. Perform Dye Penetrant Inspection

Given:

A specimen aircraft part with known invisible surface cracks, a dye penetrant inspection kit with applicable operating instructions and AC 43.13-1 or equivalent publication.

Performance:

The student will prepare the specimen part for inspection, apply and remove the penetrant, apply developer, inspect for cracks and complete after inspection cleaning.

Standard:

Perform all steps in accordance with instructions and locate at least one crack.

3. Perform Magnetic Particle Inspection

Given:

A steel aircraft part having a known subsurface flaw or fracture, magnetic particle inspection equipment, applicable operating

instructions, and AC 43.13-1 or equivalent publication.

Performance:

The student will properly mount the part in the magnetic particle inspection equipment, magnetize the part and flow the particles over the part during the magnetizing process. He will then inspect the part for any indications of cracks or other discontinuities. This process will be repeated for magnetization at 90° to the first magnetization.

Standard:

The student will correctly locate and identify at least one fault known to be in the specimen.

4. Perform Test to Distinguish Between Heat Treatable and Weldable Aluminum Alloys

Given:

Written information concerning aluminum alloy identification, samples of heat treatable and weldable aluminum alloys which lack legible code markings and a kit of testing chemicals for aluminum alloy identification.

Performance:

The student will perform tests on six samples of aluminum alloy to determine and mark those which are heat treatable and those which are weldable.

Standard:

Correctly test and mark at least two samples of heat treatable and two samples of weldable aluminum alloy.

B. Inspect and Check Welds

1. Inspect and Evaluate Welds

Given:

Assorted aircraft welded assemblies of acceptable and unacceptable quality, written information concerning welding including AC 43.13-1 or equivalent publication.

Performance:

The student will inspect and evaluate the quality of the welds in each of ten welded aircraft assemblies. He will point out any faults or defects in each weld and decide whether it is acceptable or should be rejected.

Standard:

Decision of acceptance or rejection will be correct for at least 8 welded and at least 80 percent of the defects and flaws pointed out will be valid in accordance with written information.

2. Perform Inspection of Welded Assemblies

Given:

Samples of aircraft welded assemblies which have known cracks and/or blowholes not easily visible to the unaided eye, magnifying glass (10 power or greater), dye penetrant or Zyglo test equipment, magnetic particle test equipment, AC 43.13-1 or equivalent publication and operating instructions for the test equipment.

Performance:

The student will locate cracks and/or blowholes in each of five welded assemblies using a magnifying glass, dye penetrant and magnetic particle tests as applicable for the kind of material being tested.

Standard:

Locate and identify flaws in at least three of the welded assemblies and perform inspection in accordance with the instructions provided.

C. Perform Basic Heat Treating Processes

1. Effects of Heat Treatment

Given:

Written technical information and questions with multiple choice answers concerning the effects of various forms of heat treatment on metal alloys.

Performance:

The student will select correct answers for ten questions concerning the relationship between tensile strength and metal hardness, how hardness and tensile strength are determined, the effects of heat treatment processes on aluminum alloys and the results of incorrect heat treatment procedures.

Standard:

Select at least seven correct answers.

2. Identify Aluminum Alloy Code Designation of Heat Treatability

Given:

Samples of aluminum alloy sheet and AC 43.13-1 or equivalent written data concerning identification of aluminum alloys.

Performance:

The student will identify samples of aluminum alloys, at least five of which are considered heat treatable, five non-heat treatable and three with trademarks indicating surface corrosion prevention treatment.

Standard:

Correctly identify at least two types of heat treatable aluminum alloys, at least three types of non-heat treatable and two types with surface corrosion prevention treatment.

3. Heat Treatment Processes and Strain Relieving

Given:

Written technical information and questions concerning heat treatment processes, tempering and strain hardening of metals.

Performance:

The student will answer five questions concerning the steps in heat-treatment of aluminum alloys, five questions concerning the effect of heating metal, such as steel, slightly above critical temperature, then cooling it rapidly, and five questions concerning strain hardening and its effect on the tensile strength of aluminum alloys.

Standard:

Correctly answer at least three questions in each of the three categories.

4. Anneal Copper and Steel Parts

Given:

Samples of copper tubing and welded steel parts, an oven or torch and written procedural information.

Performance:

The student will use an oven or torch to anneal a piece of copper tubing and to stress relieve a welded steel part.

Standard:

The annealed copper tubing will be capable of being formed around a radius of three times its diameter. The steel part will be bent in a vise to provide evidence of stress relieving.

D. Perform Precision Measurements

1. Inspection Concepts

Given:

Ordinary micrometer, vernier micrometer, gauge block, hole snap gauge, ball gauge and go, no-go gauge.

Performance:

The student will demonstrate the use of an ordinary micrometer and a vernier micrometer; demonstrate the precautions that should be observed when handling precision measuring instruments; calibrate a micrometer; demonstrate the use of a hole snap gauge and ball gauge and explain why go no-go gauges are used in place of other measuring devices.

Standard:

The student will be able to perform four out of five of the above operations.

2. Inspection

Given:

Used and worn aircraft components including shafts, bearings, bearing journals, cylinders with associated pistons, connecting rods, crankshaft, sheet metal parts and inspection tools including micrometers, calipers, hole and snap gauges, dial indicators, "V" blocks, surface plates and written inspection data, blank report forms and tags.

Performance:

The student will perform inspections using appropriate inspection tools to detect wear and/or deterioration in twenty used and worn aircraft components and complete typical report forms or status tags indicating acceptance or rejection of the inspected components.

Standard:

At least fifteen inspections and report forms will be completed in conformance with the written data provided.

E. Identify and Select Aircraft Hardware and Materials

1. Aircraft Fasteners

Given:

A random display of aircraft quality bolts, a bolted installation problem on an aircraft, powerplant or mock-up and written information.

Performance:

On an aircraft, powerplant or mock-up, the student will determine the correct length of bolts to install, some bolts with castle nuts and some with self-locking nuts and torque all of them to the correct value.

Standard:

Correctly identify ten different bolts from AN markings and by measurement and install bolts and nuts in accordance with return-to-flight standards.

2. Identify Aircraft Control Cables

Given:

Written technical information and samples of aircraft control cables including non-flexible, flexible and extra flexible types.

Performance:

The student will identify six different samples of aircraft control cable, as to type of cable, number of strands, number of wires per strand, material and whether preformed or non-preformed.

Standard:

Correctly identify at least five samples.

3. Identify Materials Suitable for Use in Construction of Firewalls and Exhaust Shrouds

Given:

Written technical information and samples of materials suitable for use in aircraft firewalls and exhaust shrouds.

Performance:

The student will identify six samples of materials suitable for use in aircraft firewalls and exhaust shrouds. He will use pertinent technical reference information or aircraft manuals to illustrate the suitability of the materials.

Standard:

At least five materials will be correctly identified and at least five applications correctly listed.

4. Rivet Identification

Given:

A random display of rivets varying in size, head shape, length and material.

Performance:

The student will examine and separate thirty-five random rivets as to type, size and material. He will identify each rivet by head shape, alloy and where applicable, type or letter designating strength characteristics. He will answer ten questions for certain types of rivets concerning chilling, "age hardening" and which types of rivet need heat treatment.

Standard:

Correctly identify at least twenty-five rivets and answer eight questions correctly.

5. Determine Suitability of Materials for Aircraft Repairs

Given:

Written technical information and sample materials for aircraft structural repairs.

Performance:

The student will select suitable materials for use in aircraft structural repairs to pressurized sections of a fuselage, fuel cell areas, wing rib sections, flight control surfaces and honeycomb or laminated structures. He will use and interpret information pertaining to the specific types of repairs.

Standard:

Proper selection of material in conformance with technical information provided.

6. Identification of Aluminum Alloys

Given:

A random display of sheet aluminum samples including at least ten different alloy types and written aluminum alloy reference data.

Performance:

The student will identify ten samples of the various family groups of aluminum alloy by visual recognition of code designations and select appropriate alloys for specified aircraft applications.

Standard:

Correctly select at least eight aluminum family group samples and at least eight alloys for specific applications.

7. Identification of Steel Alloys

Given:

Random selection of aircraft steel alloy tubing and sheet and SAE and AISI code publications.

Performance:

The student will identify the SAE code markings, and referring to the SAE or AISI publications, interpret the coding for ten samples.

Standard:

Identification of material and interpretation of code will be without error.

8. Recognition of Economic and Engineering Criteria

Given:

Written information and a series of questions, with multiple choice answers, concerning the economic and engineering criteria involved in selection of materials for specific aircraft applications.

Performance:

The student will select answers for thirty questions covering the economic and engineering criteria involved in selecting materials for specific aircraft applications. The questions will be concerned with shaping and forming of metal alloys, plastics and rubber, and the determination of the mechanical properties of materials.

Standard:

Select correct answers for at least twenty-one questions.

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1. Micrometer. 16mm. 13 min. Black and White. Sound. UW.

2. Precisely So. 16mm. 20 min. Black and White. Sound. General Motors.

3. Shop Procedures. 16mm. 17 min. Black and White. Sound. McGraw-Hill.

4. Steel Rule. 16mm. 14 min. Black and White. Sound. UW.

5. The Tools and Rules for Precision Measuring. 16mm. Black and White. Sound. Starret Company.

A P P E N D I X

Quinmester Post Test Sample

Quinmester Post Test

Name_____ Date_____ Score_____

1. A dye penetrant test can be used on which of the following:
    1. Aluminum, brass, copper.
    2. Cast iron, titanium, stainless steel.
    3. Ceramic, glass, natural rubber.
    4. All of the above.

2. What material is used in the construction of firewalls?
    1. Stainless steel.
    2. Aluminum steel alloy.
    3. Lorenium steel.
    4. Alclad aluminum alloy.

3. Both circular and longitudinal magnetization should be used when magnafluxing some metal parts in order to
    1. make them easier to de-magnetize.
    2. obtain a better current flow.
    3. prevent polarization.
    4. inspect both planes.

4. You would most likely find clevis bolts installed
    1. in landing gear systems.
    2. where shear force is applied.
    3. where torsional force is applied.
    4. where shear and torsional forces are applied.

5. The use of a fiber self-locking nut is not recommended if it
    1. will be under a shear strain.
    2. will be subjected to rotation.
    3. will be under a compression strain.
    4. is to be installed on a unit which will be under vibration.

6. After spilling the solution from a nickel cadmium battery, you neutralize the solution with
    1. potassium hydrolide.
    2. sodium bicarbonate (baking soda).
    3. sodium hydroxide.
    4. acetic acid (vinegar) or boric acid.

7. To prevent corrosion of the interior surfaces of aircraft structural tubing, you should
    1. flush it with hot oil and seal the openings.
    2. flush it with bituminous paint.
    3. purge the tubing with nitrogen and seal it.
    4. flush it with fleg proof paint.

8. What should be done to a weld that has a rough, pitted and globular surface?
    1. Fill the holes with solder.
    2. Remove the old weld and reweld.
    3. Heat the weld to remove the globules and fill the holes.
    4. File the weld to a smooth, clean appearing surface.

9. What is the disadvantage of a dye penetrant inspection?
    1. The crack must be on the surface of the part being inspected to be detected.
    2. This method is too messy.
    3. This method takes too much time.
    4. Lateral cracks are difficult to detect.

10. Which of the following non-destructive inspection methods is normally the most satisfactory to determine the internal structural condition of a highly stressed aluminum base alloy fitting?
    1. Flourescent penetrant inspection.
    2. Magnetic particle inspection.
    3. Dye penetrant inspection.
    4. X-ray or radiographic inspection.

11. When a ferrous metal is heated above its critical temperature and cooled rapidly it will
    1. increase hardness.
    2. become more brittle.
    3. increase in tensile strength.
    4. all of the above.

12. On a finished weld, no oxide should be formed on the base metal at a distance of more than
    1. 1/2 inch from the weld.
    2. 1/8 inch from the weld.
    3. 3/16 inch from the weld.
    4. 1 inch from the weld.

13. How can you detect intergrannular corrosion in metal? By
    1. a white powdery substance on the surface of the metal.
    2. x-ray or ultrasonic inspection.
    3. dye penetrant inspection.
    4. surface pitting and discoloration of the metal.

14. What type hex head bolt has a triangle on the top of the head with an "X" in the triangle?
    1. Corrosion resistant.
    2. NAS close tolerance.
    3. AN Standard.
    4. Internal wrenching.

15. Who is responsible for the proper material being used in the repair of an aircraft?
    1. The owner of the aircraft.
    2. The installing person or agency.
    3. The manufacturer of the material.
    4. The supplier of the material.

KEY TO QUINMESTER POST TEST
9073.01

1.	4	6.	4	11.	4
2.	1	7.	1	12.	1
3.	4	8.	2	13.	2
4.	2	9.	1	14.	2
5.	2	10.	4	15.	2